

## CLAIMS

1. A fibre based on polyolefin polymer, said fibre having at least one of the features selected from the group consisting of
  - 5 i) a fibre/fibre friction of no more than 600 g;
  - ii) a spin finish comprising essentially of an aqueous emulsion of polysiloxanes, with at least 25% active content;
  - iii) a draw ratio at least 1:1.5;
  - iv) a fibre crystallinity of at least 50%.
- 10 2. A fibre according to claim 1 wherein the fibre/fibre friction is no more than 500 g.
3. A fibre according to claim 1 wherein the fibre/fibre friction is 200 to 600 g.
- 15 4. A fibre according to claim 1, wherein the spin finish consists essentially of an aqueous emulsion of polysiloxanes of at least 30% active content.
5. A fibre according to claim 4, wherein the spin finish is applied at a concentration of 2-15%.
- 20 6. A fibre according to any one of claims 4 to 5, wherein the spin finish level is 0.2 to 1% wt/wt with respect to the fibre.
7. A fibre according to claim 1, wherein the fibre crystallinity is at least 55% as measured
  - 25 by DSC or XRD.
8. A fibre according to claim 1, wherein the polyolefin polymer is a nucleated polymer.
9. A fibre according to claim 1, wherein the polyolefin polymer is a nucleated polymer,
  - 30 wherein the nucleating agent is selected from the group consisting of talc, metallic salts of aliphatic or aromatic carboxylic acids, branched polymers containing dendritic branches and minerals such as chalk, gypsum, clay kaolin, mica, and silicates and compounds that are based on D-sorbitol and 1,3-2,4-bis-(3,4-dimethylbenzylidene)-D-sorbitol.
- 35 10. A fibre according to claim 9, wherein the nucleating agent is talc.
11. A fibre according to claim 9, wherein the polyolefin polymer is a nucleated polymer, nucleated with 5000 to 10000 ppm of talc.
- 40 12. A fibre according to claim 1, wherein the polyolefin is selected from the group consisting of isotactic or syndiotactic polypropylene homopolymers, homo and copolymers of monoolefins such as ethylene, propylene, alphaolefins, 4-methyl-1-pentene and blends



thereof, linear polyethylenes, high density polyethylene, low density polyethylene, and linear low density polyethylene and blends of the same.

13. A fibre according to claim 9, wherein the polyolefin is selected from the group consisting of homopolymer polypropylene and homopolymer polyethylene.
14. A fibre according to claim 9, wherein the polyolefin is homopolymer polypropylene.
15. A fibre according to claim 1 with a bulk of at least about 30 cm<sup>3</sup>/g.
16. A fibre according to claim 1, wherein the draw ratio is about 1:2 to 1:8.
17. A fibre according to claim 1 having an ST dtex value of 2 to 20 dtex.
18. A fibre based on polyolefin having a resilience of at least about 40%.
19. A fibre according claim 1 or 18, wherein the polyolefin has a flexural modulus of at least 1500 MPa.
20. A fibre based on polyolefin polymer according to claim 1 or 18, said fibre having at least two of the features selected from the group consisting of
  - i) a fibre/fibre friction of no more than 600 g;
  - ii) a spin finish comprising essentially of an emulsion of polysiloxanes
  - iii) a draw ratio of at least 1:1.5 with a final fibre fineness of 2 to 10 dtex.
  - iv) a fibre crystallinity of at least 50%,
  - v) the polyolefin polymer is a nucleated polymer,
  - vi) the polyolefin has a flexural modulus of at least 1500 MPa.
21. A fibre based on polyolefin polymer according to claim 1 or 18, said fibre having at least two of the features selected from the group consisting of
  - i) a fibre/fibre friction of no more than 600 g;
  - ii) a spin finish comprising essentially of an emulsion of polysiloxanes
  - iii) a draw ratio of at least 1:1.5 with a final fibre fineness of 2 to 10 dtex.
  - iv) a fibre crystallinity of at least 50%,
  - v) the polyolefin polymer is a nucleated polymer.
22. A fibre based on polyolefin polymer according to claim 1 or 18, wherein the polyolefin polymer is a nucleated polymer. and said fibre has
  - i) a fibre/fibre friction of no more than 600 g;
  - ii) a spin finish comprising essentially of an emulsion of polysiloxanes
  - iii) a draw ratio of at least 1:1.5 with a final fibre fineness of 2 to 10 dtex.
  - iv) a fibre crystallinity of at least 50%.



23. A non-woven material prepared from a polyolefin-based staple fibre as defined in any one of claims 1-22.
24. A non-woven material based on polyolefin-based staple fibre, wherein the non-woven  
5 material has a bulk of at least  $30 \text{ cm}^3/\text{g}$  and a resilience of at least 50%.
25. A non-woven material according to any one of claims 23 to 24, wherein the non-woven material has a resilience of at least 55%.
- 10 26 A non-woven material according to any one of claims 23 to 25, wherein the nonwoven material has bulk of at least 35%.
27. A method of preparing a polyolefin-based fibre, said method characterised in the use of a nucleated polymer, a draw ratio of at least 1:1.5 with a final fibre dtex of 2 to 10 dtex.,  
15 and a spin finish comprising essentially of an emulsion of polysiloxanes.
28. A method according to claim 27, wherein the polymer is selected from polyethylene and polypropylene.
- 20 29. A method according to claim 27, wherein the draw ratio is 1:2 to 1:8.
30. A method according to claim 27, wherein the spin finish consists essentially of an aqueous emulsion of polysiloxanes, with at least 25% active content.
- 25 31. A method according to claim 30, wherein the spin finish is applied at a concentration of 2-15%.
32. A method according to claim 30, wherein the spin finish level is 0.2 to 1% wt/wt with respect to the fibre.
- 30 33. A method of preparing a non-woven material comprising the use of a fibre as defined in any one claims 1 to 22, or the use fibre prepared according to the method according to any one of claims 27 to 32.
- 35 34. A method according to claim 33, wherein the fibres are oven-bonded at a temperature of 130 to 150 °C.